

### **REMARKS/ARGUMENTS**

Claims 1-23 are currently pending in this application, all of which are rejected. Applicants have amended claim 20 to more clearly define the claimed subject matter, support for the amendment can be found on page 7, lines 22-28. Applicants appreciate the telephonic interview with the Examiner on March 17, 2008 in which she confirmed that the Office Action dated March 3, 2008 is a Non-Final Office Action as is reflected in the Interview Summary dated March 24, 2008. Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

**1. Claim 20 is rejected under 35 U.S.C. § 112, first paragraph, for lack of written description.**

Claim 20 is rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The Examiner asserts that there is no support anywhere in the specification to the polymer shell encapsulating a propellant and a reaction product of a monomer and an agent. In contrast, applicants submit however that claim 20 is directed to an expandable thermoplastic microsphere comprising a polymer shell encapsulating a propellant and in addition the expandable thermoplastic microsphere comprises at least one non-polymeric reaction product of at least one monomer used for the polymer shell and an agent. The expandable microsphere of claim 20 as described above is clearly disclosed on page 7, lines 22 to 28 of the specification wherein an expandable thermoplastic microsphere is disclosed comprising a thermoplastic polymer shell encapsulating a propellant and further comprising at least one non-polymeric reaction product of at least one monomer used for the polymer shell and an agent. To more clearly define the claimed invention applicants have amended claim 20 to recite “... comprising **a**) a polymeric shell encapsulating a propellant; and **b**) at least one non-polymeric reaction product ....”

Therefore, Applicants submit that the claimed expandable microspheres of the claimed invention is clearly described in the specification to the skilled artisan. Accordingly, Applicants submit that the claimed invention complies with the written description requirement and withdrawal of the rejection of claim 20 under 35 U.S.C. § 112, first paragraph, is respectfully requested.

**2. Claims 1-23 are rejected under 35 U.S.C. § 103(a), as allegedly being obvious**

Claims 1-23 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nakayama et al (US 4,287,308) in combination with Miller (US 4,255,307) for reasons of

record. According to the Examiner the use of the specified sulfur containing agents in Miller in the process of Nakayama et al is warranted for several reasons including lack of bad smell. In addition, the Examiner asserts that the proposed substitution of the sulfur containing compounds does not have to result in a better or advantageous composition, all that is required is a reasonable expectation of success. Further, the Examiner asserts that the agents disclosed in Miller are known agents of very effectively reducing monomer content in a variety of acrylonitrile monomer containing products using such known agents for its precise function disclosed in Miller in another acrylonitrile monomer containing composition, which is also concerned with the same problem (reduction of monomer amounts) in place (or in addition) of another agent clearly warrants a reasonable expectation of successful removal of the monomer. Further, the Examiner asserts that even though Miller does not address specific characteristics of the agents it uses, or some specific effect of using those agents, the question is not whether the reference discloses certain advantages, rather it is whether those advantages are expected.

In response applicants submit Nakayama et al disclose reducing the amount of residual monomer in a process of preparing an expandable microsphere by cyanoethylation. Nakayama et al disclose various cyanoethylation agents including sulfides but not the distinct class of sulfur containing agents as in the presently claimed invention. Furthermore, the cyanoethylation agents in Nakayama et al reduce the amount of residual monomer in the expandable microsphere while maintaining other important characteristics of the thermoplastic microsphere, such as the expandability of the thermoplastic microsphere. In contrast, Miller et al disclose the use of sulfites in reducing the amount of residual acrylonitrile in aqueous dispersions which may comprise polymeric "lattices" based on acrylonitrile. The properties and characteristics of the aqueous dispersions of polymers in Miller are very different from the expandable microspheres taught in Nakayama et al.

The expandable microspheres in Nakayama et al as well as in the claimed invention have specific characteristics that are not present in the polymers described in Miller et al. Moreover, table 1 of the present invention clearly illustrates that certain agents for reacting with the residual acrylonitrile and alkylacrylonitriles compromise the color and expandability of the resulting microsphere. Such agents that compromise important characteristics of the resulting microspheres includes sulphur containing agents such as for example diphenyl sulfoxide. In addition, Nakayama et al recognized that maintaining expandability is an

important requirement for the chosen agents to reduce the amount of residual amount of acrylonitriles and teaches or suggest that the sulphur containing agents (sulfide and sulfates) are not performing optimally in the described process. The skilled artisan therefore would not have been motivated to replace the agents disclosed in Nakayama et al to reduce the amount of residual acrylonitrile in the polymeric shell of the expandable microspheres with the sulphur containing (sulfites) agents as in the claimed invention. Further, there is nothing in the teachings of Miller et al that suggests that the sulphur containing agents (sulfites) that are disclosed therein are useful in the process of reducing the amount of residual acrylonitrile monomers in a polymeric shell of an expandable microsphere while retaining its expandability and color. These characteristics are irrelevant with respect to the polymers (lattices) of Miller et al. Thus, Applicants submit there is no motivation to combine the teachings of Miller with those of Nakayama et al, substituting the disclosed cyanoethylation agents in Nakayama et al with a sulfite as disclosed in Miller to arrive at the claimed process. The class of sulfur containing agents in Nakayama et al is clearly inferior to the preferred primary or secondary lower alkylamines as a cyanoethylation agent. Accordingly, one skilled in the art would not have been motivated reading the disclosure of Nakayama et al to use the sulfites, another class of sulfur containing agents, disclosed in Miller et al in reducing the amount of residual monomers in a process of producing expandable microspheres.

Therefore, Applicants submit that the claimed process of producing expandable microspheres or reducing the amount residual monomers in an expandable microsphere is not taught or suggested by Nakayama et al in view of Miller. Accordingly, Applicants submit that the claimed invention is non-obvious over the cited references and withdrawal of the rejections of claims 1-23 under 35 U.S.C. § 103(a) is respectfully requested.

It is believed that claims 1-23 are now in condition for allowance, early notice of which would be appreciated. If any outstanding issues remain, the examiner is invited to telephone the undersigned at the telephone number indicated below to discuss the same.

Respectfully submitted,  
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